South Wasilla
Track Realignment

NEPA ENVIRONMENTAL ASSESSMENT

Submitted pursuant to 42 U.S.C. 4332(2)(c), 23 CFR Part 771

by the

Federal Transit Administration

and

Alaska Railroad Corporation

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21 September 2005
Date of Approval

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The Alaska Railroad Corporation seeks to improve the safety and efficiency of its operations by realigning approximately four miles of mainline track in the southeast portion of Wasilla in the Matanuska-Susitna Borough of south-central Alaska. The project area is bound by the Parks Highway to the north and extends diagonally southeast to northwest to encompass ARRC mileposts 154 to 158. This document addresses the potential environmental impacts associated with the proposal.

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Comments on this environmental assessment are requested by November 2, 2005 and should be sent to Kristina Swanson, Project Manager, Alaska Railroad Corporation, P.O. Box 107500, Anchorage, Alaska, 99510, (907) 265-2497, or by e-mail to public_comment@akrr.com.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
ADNR	Alaska Department of Natural Resources
AHRS	Alaska Heritage Resources Survey
ARRC	Alaska Railroad Corporation
BMPs	Best Management Practices
CWA	Clean Water Act
DOT&PF	(Alaska) Department of Transportation & Public Facilities
EA	Environmental Assessment
EPA	Environmental Protection Agency
EFH	Essential Fish Habitat
FEMA	Federal Emergency Management Agency
FTA	Federal Transit Administration
FONSI	Finding of No Significant Impact
Mat-Su	Matanuska-Susitna
MOA	Municipality of Anchorage
MP	Milepost
mph	Miles Per Hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Places
PM_{10}	Particulate matter less than 10 micrometers in size
ROW	Right-of-Way
SHPO	State Historic Preservation Office, Alaska Office of History & Archaeology
Sp.	Species
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Fish & Wildlife Service

1.0 INTRODUCTION

The Alaska Railroad Corporation (ARRC) seeks to improve the safety and efficiency of its operations by realigning approximately four miles of mainline track in the southeast portion of Wasilla in the Matanuska-Susitna (Mat-Su) Borough of south-central Alaska. Figure 1.1 depicts the project area. The project area is bound by the Parks Highway to the north and extends diagonally southeast to northwest to encompass ARRC mileposts 154 to 158. The track alignment through the project area was originally constructed before 1920. Construction technology and methods at that time limited the amount of material that could technically and feasibly be moved to construct acceptable railroad grades. The track was often constructed along existing geographical contour lines, resulting in substantial curvature in the alignment. Most of the track in the project area remains where it was originally built over 85 years ago. Since that time, operating speeds have increased, rail freight and passenger demand has grown, and construction techniques have improved.

The purpose of this Environmental Assessment (EA) is to present and analyze the environmental consequences of the Proposed Action, reasonable alternatives to the Proposed Action, and the No Action Alternative in accord with the National Environmental Policy Act (NEPA).

1.1 Purpose and Need

1.1.1 Purpose

The purpose of the South Wasilla Track Realignment project is to improve operational efficiencies, enhance safety, decrease train travel times, reduce train horn noise, and reduce operations and maintenance costs. The goal is to construct a straighter railroad track alignment between ARRC MP 154 and 158 and to eliminate at-grade (same elevation) roadway crossings of the ARRC mainline. The project would bring the rail line up to a modern track design to achieve speeds between 50 and 60 miles per hour (mph) to accommodate current and future passenger and freight traffic (trains) through the corridor.

1.1.2 Need

This project addresses a number of safety problems and operational needs caused by the sharp track curvature and at-grade rail and road crossings, which are summarized in Table 1-1.

Table 1-1: South Wasilla Track Realignment Needs

Enhance safety	▪ The sharp curvature increases the risk of train derailment. ▪ At-grade crossings are a safety concern due to the risk of vehicle-train accidents.
Reduce horn noise	▪ At-grade road and rail crossings necessitate sounding the train horn, a major cause of train noise. Five at-grade road crossings occur on the track's current alignment.
Improve train travel time	▪ The sharp curvature necessitates slow train travel speeds, which adds considerably to travel time and results in inconvenience to passengers. Shortening travel time in the corridor is a key goal for successful future commuter rail service in the corridor.
Improve operating efficiencies and reduce costs	▪ The additional travel time adds operational cost (labor and fuel) to trips in the corridor. ▪ The sharp curvature causes increased train resistance, which in turn increases wear on the rail and train wheels; this increases maintenance costs and reduces serviceable life on both the rail and train wheels.

Enhance Safety: One important safety need is to reduce the risk of train derailments. Train derailments are infrequent events, but they can be catastrophic. ARRC recently completed an assessment of derailment risk throughout the Alaska Railroad. Based on that study, the ARRC has implemented a Derailment Prevention Program, of which a key portion includes a track replacement program to eliminate areas of high risk for derailment as a result of track conditions (i.e., curvature and grade).

Straighter track reduces the probability of derailments. The assessment found the need to realign track between the Mat-Su Valley and Anchorage to reduce high curvature and grade.

ARRC had four passenger train derailments (fortunately with no injuries) between 1990 and 2000, all of which occurred on curved track at speeds of 25 mph or less. Sharp curvature increases the risk of train derailment. In the project area, there are ten curves ranging from 1º to 12º. The preferred degree of curvature is 2º. Reducing curvature decreases derailment risk, even if speeds are increased. Once curvature is reduced, a permanent safety benefit accrues to the traveling public, the environment, adjacent landowners, and the ARRC.

Another safety need is to eliminate at-grade road crossings to minimize the potential for train-vehicle collisions at those crossings. The proposed project would eliminate five at-grade crossings (one private drive, three roads, and one road accessing an industrial area) from the ARRC mainline.

Reduce Horn Noise: Train horns on locomotives warn motorists or pedestrians of an approaching train at an at-grade crossing. Currently, depending on the season, and estimated 33 to 42 residences are impacted by train noise along the existing alignment (HMMH 2004). A primarily contributing noise source is train horns at the five at-grade crossings. Relocating the mainline and constructing it without at-grade crossings would eliminate the need for mainline trains to sound horns at these crossings, thereby reduce noise levels. Horns would continue to be sounded occasionally, if needed, for other reasons.

Improve Train Travel Times: The project would satisfy a need to improve rail passenger travel times. The ARRC operates intercity passenger rail service through the project area. In the peak summer season, between 1,500 and 2,500 passengers traverse the project area on trains every day, and ridership is likely to continue to grow. Passenger train running times, however, are slow; with an average speed of approximately 30 mph between Anchorage and Fairbanks. In the project area, travel speeds are only 25 mph, and trains require about 10 minutes to travel 4 miles through the project area (MP 154 to MP 158).

Reduction of rail travel time through the corridor is a need identified by planning documents and transportation providers in support of potential commuter rail between Wasilla and Anchorage. The ARRC, in conjunction with the Mat-Su Borough, the Municipality of Anchorage (MOA), and the City of Wasilla, recently evaluated development of commuter rail service through the proposed area. The resultant plan, the South Central Rail Network Commuter Study and Operation Plan, discussed ridership potential, presented an initial operations plan, reviewed potential funding strategies, and identified a potential management structure (Wilber Smith & Associates 2002). According to the report, higher speeds and reduced travel times are necessary for future development of commuter rail service. Travel time between Anchorage and Wasilla must be reduced to less than one hour for commuter rail to be competitive. As one of the curviest segments remaining on the route, the contribution of the potential 6-minute improvement to travel time through this segment is important to the overall plan. However, implementation of this curve realignment project does not guarantee that commuter rail service would be developed in the future, but it is a necessary step toward implementing that plan.

Improve Operating Efficiencies and Reduce Costs: Curved track can be more than ten times as expensive to maintain as straight track (ARRC 2002). The project would improve ARRC operating efficiency and reduce operating and maintenance costs. As trains travel around curves, lateral forces develop. These lateral forces require a stronger track structure and a higher standard of maintenance. Curved track also accelerates wear in railcar wheels, the rail, and the ties, and causes breakdown of the track ballast. As a public corporation, the ARRC has a fiduciary responsibility to spend wisely and efficiently. As maintenance costs decrease, more funds are available to address the railroad's other critical infrastructure needs and provide better services to their customers.

ARRC is seeking various long-term capital improvements, particularly statewide track straightening, that would result in labor and fuel cost reductions. Less travel time means less fuel and less labor costs. Improvements in equipment utilization also result in, savings in locomotive and car costs. Track straightening would improve the travel times for all trains. This would help eliminate the current twelve hours of service tie-ups mandated by the Federal twelve-hour law and the need for relief train and engine crews (i.e., crew patches).

1.2 NEPA Process

In accordance with NEPA, FTA must determine if the proposed project would have significant impacts on area resources. NEPA is a nationwide mandate for the protection of the environment and applies to all federally funded projects and projects that require federal permits or other approval actions. The purpose of NEPA is to provide public disclosure of the environmental impacts associated with federal actions. The NEPA process enables public officials to make decisions that are based on an objective understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. It also provides the opportunity for public comment.

Scoping is the first step in the NEPA process. The process is designed to identify alternatives to the Proposed Action and environmental concerns or issues that should be addressed in the EA. Agency and public scoping for this project was conducted in July 2003. More details on the scoping process and other consultation and coordination are provided in Section 4.0 of the EA and in the Scoping Summary Report (HDR 2003b). Scoping identified the following issues to be addressed in this EA:

- Wasilla Creek fish habitat and wetlands (and related construction impacts);
- Right-of-way (ROW) impacts;
- Potential impacts on historic resources; and
- Change in train noise.

This EA evaluates the potential impacts of this project and alternatives on the physical, biological, and human resources in the area. If significant impacts are identified in the EA, a more detailed Environmental Impact Statement would be required. If FTA decides that impacts would not be significant, it would prepare and sign a Finding of No Significant Impact (FONSI). This finding would allow ARRC to proceed with the proposed project.

1.3 Project Authorizations

Various federal, state, and local permits and clearances would be required before construction and operation of the proposed project can begin. Certain permitting processes require public notification for review and solicitation of public comment. The following is a list of potential permit or environmental compliance requirements.

- National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities – administered by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act (CWA).
- National Historic Preservation Act (NHPA) Section 106 Consultation – administered by the State Historic Preservation Office (SHPO).
- Alaska Historic Preservation Act – Consultation and determination, administered by the SHPO in conjunction with NHPA Section 106.

- CWA Section 401 Certificate (i.e., Certificate of Reasonable Assurance) – administered by the Alaska Department of Environmental Conservation (ADEC).
- General Wastewater Disposal Permit – administered by ADEC.
- CWA Section 404 Permit – administered by the U.S. Army Corps of Engineers (USACE), Alaska District.
- Coastal Zone Management Act/Alaska Coastal Management Program Consistency Review and Determination – administered by the Alaska Department of Natural Resources, Office of Project Management and Permitting (ADNR-OPMP).
- Endangered Species Act Section 7 Consultation – administered by the U.S. Fish & Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS).
- Essential Fish Habitat Assessment Consultation – administered by NMFS under the Magnuson Stevens Fishery and Conservation and Management Act.
- Fish Habitat Permit – administered by ADNR, Office of Habitat Management & Permitting (formerly Alaska Department of Fish & Game [ADF&G] Habitat Division).
- Temporary Water Use Permit (for water withdrawals during construction) – administered by ADNR, Division of Mining, Land, and Water.
- Floodplain Development Permit – administered by the Mat-Su Borough.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action, the No Action Alternative, two other action alternatives, and the bridge alternatives considered for crossing Wasilla Creek. Several other alternatives were examined but were not selected for detailed analysis in the EA. These alternatives are also discussed, including the reasons why they were eliminated from further consideration.

The action alternatives (the Proposed Action and Alternatives 2 and 3) vary primarily in the amount of curvature. Table 2-2 provides a comparison of the alternatives, and the features of all three action alternatives are depicted on Figure 2.1. The action alternatives would create a straighter alignment between rail MP 154 and MP 156; eliminating approximately 11,000 feet of curved track. Features common to all action alternatives are as follows:

- ARRC would acquire a minimum of 100 feet of ROW on each side of the track centerline (200 feet of total ROW width).
- A single mainline track would be constructed, and it would be wide enough to facilitate construction and to provide access for maintenance vehicles along the new main line. The embankment width and footprint would be reduced to minimize wetland and fish habitat impacts, particularly at the Wasilla Creek crossing.
- A new 225-foot bridge over Wasilla Creek near MP 154 would be constructed. The crossing would consist of three bridge spans (75 feet each) and two piers, and would be wide enough to span the main channel and middle side channel. A portion of the west side channel would be realigned.
- A separated grade crossing would be constructed at Fairview Loop Road, with the road crossing over the tracks.
- The access road to the sewage treatment plant would be realigned to make a perpendicular grade-separated crossing over the tracks.
- Two underpasses for roads under the tracks would be constructed.
- Construction staging (equipment and materials storage and stockpiling) would occur in two locations – the properties currently in use for gravel extraction and the vacant field near MP 157. Material would be hauled by rail or by truck using public roadways and the proposed ROW.
- The existing track in the MP 154 to MP 156 vicinity would remain in place as a siding for temporary use, but the existing track between MP 156 and 158 would be removed.

2.1 Proposed Action

The Proposed Action would construct 3.38 miles of new track, designed with a slight S-curve to avoid a historic property located northwest of the gravel pits. From MP 156 to MP 156.6, the new mainline track would be constructed alongside the existing track, within the existing ROW. From MP 156.6, the alignment cuts across a vacant field, which ARRC would acquire. The track would cross the residential lots along East Jude Drive; these lots would likely be acquired in full and East Jude Drive closed. Old Matanuska Road would be realigned to the north outside of the proposed ARRC ROW. The existing alignment between MP 157.5 and 158.2 would be straightened.

Construction: Construction of the Proposed Action could be phased, depending on funding availability. Phase I would likely occur between MP 153.8 and 156.1. The track would tie into the existing track elevation east of the proposed Fairview Loop Crossing. If phased, the alignment in this section would be steeper to allow it to tie back into the existing track elevation prior to the proposed Fairview Loop Road Crossing. During Phase II, the track between MP 156.1 and 156.6 would be at the existing track elevation instead of being excavated lower as it would be under the un-phased approach.

Table 2-1: Comparison of Alternatives

	Proposed Action	Alternative 1 No Action	Alternative 2	Alternative 3
Alignment	A combination of a slightly curvier alignment between MP 154 to MP 156, like Alternative 2, and a straighter alignment between MP 156 and MP 158, like Alternative 3.	Most curvature of all alternatives; no change	Mid-level degree of curvature	Straightest
ROW & construction factors	More difficult to construct than Alternative 3. Balances ROW and transit time.	Track would have only one minor, already-programmed, curve realignment	ROW minimized; more difficult to construct than Alternative 3	More ROW affected; easier to construct than Alternative 2
At-grade Crossings	5 mainline at-grade intersections eliminated	No change; 5 mainline at-grade intersections remain	5 mainline at-grade intersections eliminated	5 mainline at-grade intersections eliminated
Grade-separated road crossings constructed	4	None	4	4
Other factors	New bridge over Wasilla Creek; possible sewer line reinforcement required	None	New bridge over Wasilla Creek; possible sewer line reinforcement required	New bridge over Wasilla Creek possible; sewer line reinforcement required
Maximum Grade	1.32%	1.00%	1.32%	1.36%
Maximum Length	3. 38 miles	4.39 miles	3.42 miles	3.36 miles
Design Speed Miles per hour (mph)	50-60 mph	25 mph	50-60 mph	50-60 mph
Transit Time toward Anchorage	4 minutes 10 seconds	10 minutes 32 seconds	4 minutes 19 seconds	4 minutes 5 seconds
Transit Time toward Wasilla	3 minutes 38 minutes	10 minutes 32 seconds	3 minutes 46 seconds	3 minutes 33 seconds
Total Curvature	276º	602º	287º	157º
Conceptual Construction Cost Estimate	$35.9 million	N/A	$36.1 million	$34.8 million

Transit times based on 0.5mph/second acceleration rate, 1.0mph/sec deceleration rate and 2,005-foot passenger train length.

2.2 Alternative 1: No Action Alternative

Consideration of the No Action (or "No Build") Alternative is required under NEPA regulations as a benchmark for comparison of the environmental effects of the various alternatives. This alternative would leave the track as is; the only improvement may be one minor curve realignment near MP 157 that has environmental approval and is already programmed under the Knik to Wasilla Realignment project (ARRC 2001). Safety issues, such as the risk of derailment and the five at-grade intersections located on the ARRC mainline, would remain. Train horn noise would go unchanged. The train speed goals would not be met in the corridor. The segment length would be 4.39 miles, the design speed would be 25 mph, and the average grade would be 1.00%. Operations and maintenance benefits would not be realized. The multiple curves would continue to exert excessive wear and tear on train wheels and rail, keeping maintenance costs up.

2.3 Alternative 2

Alternative 2 would construct 3.42 miles of new track, and is designed to reduce private property impacts and the amount of ROW acquisition. This requires an alignment with more curves. Alternative 2 is identical to the Proposed Action between MP 153.8 and 156.6 and the alignment avoids a historic property. From MP 156.6, the alignment crosses the vacant field. Near MP 157.3, the alignment is designed with greater curvature than the Proposed Action and Alternative 3 to minimize property takes from the residential properties along East Jude Drive. Old Matanuska Road would be realigned to stay just outside of the proposed ARRC ROW on the north side of this segment. This realignment would cross two private lots on the west end. East Jude Drive and the access road to the sewage treatment plant would be realigned to make a perpendicular grade-separated crossing of the tracks. From MP 157.3 to MP 158.2, the existing alignment would be straightened.

2.4 Alternative 3

Alternative 3 would construct 3.36 miles of new track, and is designed to reduce curvature and rail length. Alternative 3 is the shortest and straightest alignment, with the steepest grade between MP 154 and MP 156.6. In this area, the alignment crosses two gravel pits, creating a shorter and much straighter track with a slightly steeper grade. Between MP 156 and MP 156.6, the track would be offset far enough from the existing track so that it could be constructed without interfering with existing track operations. Similar to the Proposed Action, from MP 156.6 to MP 157.5, the track crosses straight across the vacant field and the alignment is straightened to MP 158.2.

2.5 Wasilla Creek Crossing Bridge Structure Alternatives

Originally eight bridge options were considered for the crossing of Wasilla Creek near MP 154. Several of the options were a result of modifications due to impacts on Essential Fish Habitat (EFH), stream channel impacts, and wetland impacts. The bridge crossing structures range from 165 feet to 280 feet. The options differ in bridge length, number of bridge spans and piers, cost estimate, impacted and created EFH, channel impacts, and wetland impacts. See Table 2-2 for a comparison of the bridge options.

Options 1a to 1d, with a 165-foot bridge length, were eliminated from consideration because permit agency personnel concurred that the bridge length is too short to maintain fish rearing habitat. Option 3 was eliminated from consideration due to the higher cost and increased ARRC long-term maintenance burden associated with a longer bridge structure. Option 2B was eliminated because while the west and middle side channels are distinctly maintained under the bridge, there is a greater impact to natural channels through fill in the middle side channel.

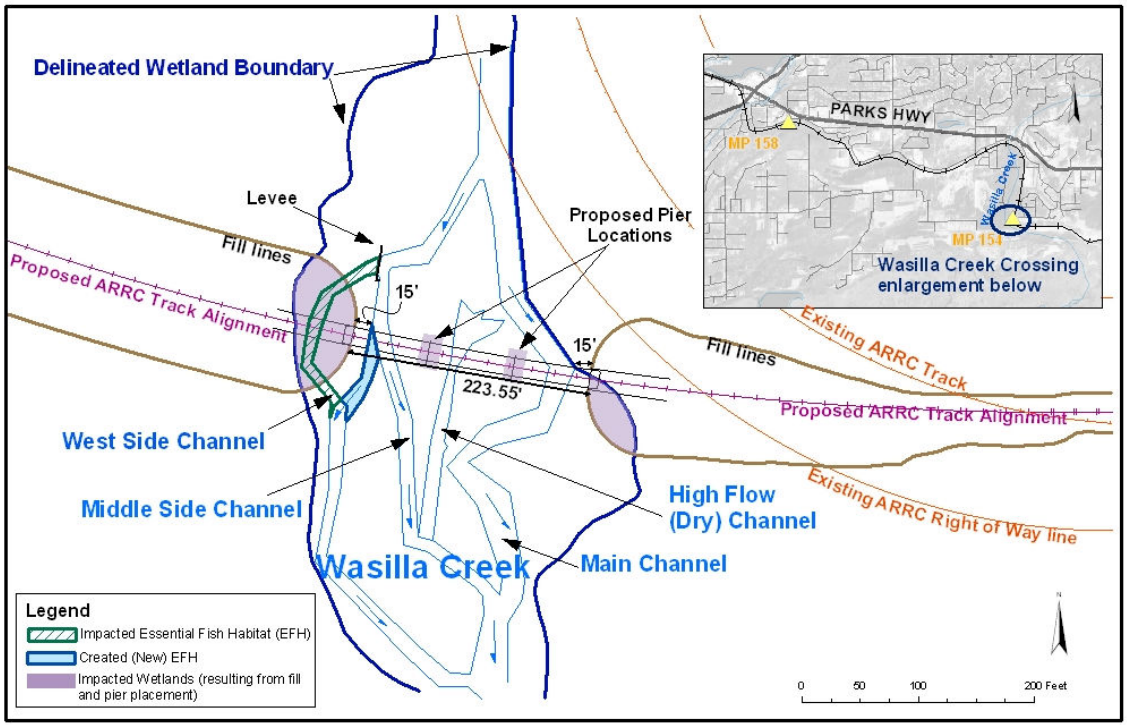
Table 2-2: Comparison of Wasilla Creek Bridge Crossing Options

Options	Description (impact to stream channels)	Bridge Length	Bridge Spans	Piers	Estimated Cost
Option 1a	West side channel culverted and Middle side channel diverted	165’	2 spans @ 82.5’ each	1	$2.65 million
Option 1b	West side channel and Middle side channel diverted	165’	2 spans @ 82.5’ each	1	$2.57 million
Option 1c	West side, Middle side, and Main channel diverted	165’	3 spans @ 55’ each	2	$2.59 million
Option 1d	Main channel diversion	180’	3 spans @ 60’ each	2	$2.72 million
Option 2	West side channel modification	235’	3 spans @ 78.33’ each	2	$3.24 million
Option 2A*	West side channel modification	223.5’	3 spans @ 74.6’ each	2	$3.11 million
Option 2B	West side channel modification	223.5’	3 spans @ 74.6’ each	2	$3.17 million
Option 3	All channels unmodified	280’	4 spans @ 70’ each	3	$3.67 million

*The proposed crossing option is 2A. A detail of the crossing is depicted in Figure 2.2.

Other factors in choosing a crossing option included: keeping the main creek channel unmodified and avoiding use of a culvert. The outcome of agency coordination was the Proposed Action (Option 2A) – a modification of Option 2 – which entailed leaving the main creek channel unmodified and opting for a larger bridge length to avoid the middle side channel.

Figure 2.2: Proposed Wasilla Creek Bridge Crossing



2.6 Alternatives Considered but Eliminated from Detailed Study

Two other alignment alternatives were considered but eliminated from further consideration, primarily due to wetlands and ROW impacts. These alignments begin at MP 153.8 and cross into the industrial area where two gravel pits exist. These alignments bisect the Carson Farm parcel (a historic property) near MP 156. From MP 156, the alignments go south of the City of Wasilla sewer treatment plant and within a ravine/wetland area. One of the considered alternatives skirts the ravine and requires a nearly 1,500-foot bridge. For the other alternative, the ARRC ROW would have to be expanded to accommodate the toe of a large embankment. These alignments were not considered further because of their affect on the Carson Farm, extensive wetland involvement, and the cost constructing the large bridge.

Options for crossing Wasilla Creek either north or south of the proposed crossing were considered, since the braided creek complex is narrower to the north and south. As discussed below, these options were not practicable.

Crossing Wasilla Creek farther North: Crossing Wasilla Creek farther north of the proposed crossing would require considerable excavation into the adjacent bluff. Because of the unstable nature of the soils in the bluff, this could ultimately lead to undercutting the southern end of one or two of the lots located at the top of the bluff. This bluff is actively eroding a little further to the east. Also, the creek channels start to diverge and spread apart, which would require a minimum bridge length of 230 feet to span this crossing point. Due to the erosion potential, impact to property, and length of bridge required this crossing was not pursued.

Starting the Curve West of the Creek: Starting the curvature of the track near MP 154 west of the creek than as proposed to enable crossing on a straighter tangent does not provide an appreciable reduction in the length of bridge required. The bank-to-bank width of crossing at this location would still be 188 feet, requiring a 233-foot long bridge. Moving the start of the curve further to the west would also likely require acquiring a developed lot from the Fairview East Addition subdivision. Moving the alignment closer to that subdivision would also likely result in greater noise impacts than crossing through the center of vacant, industrial property. Because the length of bridge required does not represent an appreciable savings and due to the additional ROW and impacts to developed residential property, this alternative was not pursued.

Crossing Wasilla Creek to the South: Due to the location of the tangent track coming into curve 154 relative to the wide point of Wasilla Creek, adjusting the alignment to the south would introduce an additional set of closely spaced reverse curves. Adding these extra curves is contrary to the curvature reduction goals of this project and would not meet the purpose and need. Moving the alignment south would also likely require acquisition of a developed lot from the Fairview East Addition subdivision. To meet the purpose and need and avoid the developed lot, this option was not pursued.

3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

This section summarizes (1) the relevant existing environmental conditions potentially affected by the Proposed Action; (2) the anticipated beneficial and adverse environmental, social, and economic effects, including direct and indirect effects of the alternatives and (3) the measures proposed to mitigate adverse impacts to reduce effects on the environment. A more detailed description of the physical, biological, and human environments and consequences is provided in Technical Appendices 3, 5, and 8 respectively.

3.1 Physical Environment

3.1.1 Air Quality

Existing Conditions: The project is located within an air quality attainment area, which means air pollution levels for airborne concentrations of criteria pollutants do not exceed the National Ambient Air Quality Standards (NAAQS). Historically, Wasilla has been impacted by windblown dust from the Matanuska and Knik River drainages, which occasionally raises the detectable levels of particulate matter (PM_{10}). Most exceedances are due to natural events.

Impacts: Under the Proposed Action, air quality impacts would be short-term, resulting from construction activities as discussed in Section 3.4, "Construction." Increased emissions of EPA criteria pollutants under the Proposed Action are not anticipated. The Proposed Action would not exacerbate air quality beyond what is anticipated to occur with the No Action Alternative. No direct or indirect impact to air quality is anticipated under the Proposed Action or Alternatives 2 or 3.

Mitigation and Authorizations: Mitigation for air quality impacts associated with construction of the Proposed Action is discussed in Section 3.4. No other mitigation is proposed.

3.1.2 Soils and Geology

Existing Conditions: Several glaciations have formed the geologic features of the Matanuska Valley. The sediments within the project area are likely to be well-graded, dense glacial tills and/or outwash deposits. In general, the surface soil conditions along the corridor are variable, ranging from well-drained sands and gravels to low-lying peat deposits. Permafrost is not an issue in the project area (NRCS 2004).

One of the prominent geologic features in the Mat-Su Valley is the Castle Mountain Fault. The existing ARRC alignment currently crosses the Castle Mountain fault near Houston, which is located 10 miles northwest of Wasilla. A study published in 2002 found that magnitude 6 or 7 earthquakes have ruptured the Castle Mountain fault every 700 years over the past 2,800 years.

Impacts: According to the Natural Resources Conservation Service, none of the action alternatives would affect any lands of local importance (NRCS 2003). Grading and construction activities are discussed in Section 3.4 "Construction." Minor alteration of the existing topography is anticipated, especially in the area of Curve 158, where fill/cut would be needed. Geotechnical fieldwork done in August 2003 showed that the majority of the soil in the project area would provide adequate subgrade support for the realignment. No significant geological limitations to the Proposed Action were identified along the realignment route. Because the project is located in an area subject to seismic activity, damage to the tracks and bridges during an earthquake is possible. Alternatives 2 and 3 would have impacts to soils and geology similar to the Proposed Action. Under the No Action Alternative, no changes to the existing environment would occur.

Mitigation and Authorizations: The Proposed Action's final design would address the region's potential for earthquake activity. Mitigation for potential impacts during construction is discussed in Section 3.4.

3.1.3 Hydrology, Flood Zones, and Water Resources

Existing Conditions: Wasilla Creek is an important surface water body in the project area. Several excavated open water ponds are located in the gravel pits. Upstream of the project area, Wasilla Creek flows mostly through rural agricultural lands and low, but increasing urban development. The ARRC tracks currently cross over Wasilla Creek near MP 155. The proposed ARRC crossing of Wasilla Creek is near MP 154. Near MP 154, the creek has one main channel, two side channels, and a high flow channel. Immediately upstream of the proposed ARRC crossing, Wasilla Creek runs parallel to the toe of the existing ARRC embankment. Wasilla Creek is not listed as a navigable water by the USACE (USACE 2004) or the U.S. Coast Guard (USCG 2004).

Based on a 1986 Federal Emergency Management Agency (FEMA) Flood Insurance Study for the Mat-Su Borough, through the project area, Wasilla Creek is mapped as being within the 100-year flood zone. No impaired water bodies exist in the project area (ADEC 2003a). The groundwater in the area is not an EPA-designated sole source aquifer. According to the City of Wasilla, several homes in the project area are served by individual water wells.

Impacts: The Proposed Action crosses Wasilla Creek with a minimum 225-foot long bridge to avoid impacts on upstream water surface elevations during the 100-year flood. Based on flood modeling and ground survey data, a 150-foot hydrologic opening is needed to pass the 100-year flows. The proposed 225-foot bridge is 75 feet longer and would therefore result in less than a one-foot rise in upstream flood elevations. The additional 75 feet was added, after consultation with permitting agencies, to mitigate impacts to fish habitat and it also benefits mammal migration. Alternatives 2 and 3 have the same crossing as the Proposed Action and would have identical impacts. Under the No Action Alternative, no changes to the existing floodplain environment would occur, and no impacts would be anticipated.

The Proposed Action and Alternatives 1 and 2 each cross Wasilla Creek in the same place and would have identical water quality affects. Construction of the bridge abutments and piers would occur adjacent to several active channels, which could affect water quality from sedimentation during construction. Water quality impacts and mitigation due to construction of the project are discussed in Section 3.4. Water wells in the project area are deep enough that there would likely be no water quality impact (City of Wasilla 2004a).

Introduction of a gravel embankment would change existing storm water runoff patterns but would have little affect on the amount or water quality of storm water runoff. The new embankment would be located adjacent to the existing embankment and closer to these wetlands. Realignment of roads like Old Matanuska Road and Fairview Loop Road would require modification of storm drainage along the new segments of roadway.

Mitigation and Authorizations: A Mat-Su Borough Floodplain Development Permit would be required for the segment of the embankment and bridge structure within the designated floodplain along Wasilla Creek (Mat-Su Borough 2004). The project would include drainage facilities to minimize pollution of water sources by storm or snowmelt runoff. The bridge would have a cast-in-place concrete deck, which would be used to support the track and contain the ballast, to minimize sediments from entering Wasilla Creek. ARRC would use contaminant-free embankment and surface materials and would design span lengths and pier locations to avoid active channels. Mitigation for impacts during construction is discussed in Section 3.4.

Because Wasilla Creek is not navigable or tidally influenced, no Section 9 Bridge Permit, administered by the USCG under the Rivers and Harbors Act of 1899, would be required (USCG 2004).

3.1.4 Coastal Zone

Existing Conditions: The project falls within the Mat-Su Borough Coastal District, and would require local, state and federal permits. The Mat-Su Borough Coastal Management Plan (1987) gives the following guidance on transportation policies: "transportation routes shall be sited inland from the shoreline and avoid important fish and wildlife habitat areas unless no feasible or prudent alternative exists to meet the public need for the route."

Impacts: The Proposed Action is subject to the policies of the Mat-Su Borough Coastal Management Program and appears to be consistent with the program. The Proposed Action avoids, minimizes, and/or mitigates impacts to fish and wildlife habitat. This also applies to Alternatives 2 and 3. Under the No Action Alternative, no changes to the existing environment would occur.

Mitigation and Authorizations: The ADNR-OPMP, in cooperation with the designated Mat-Su Borough representative, would make a determination of consistency with the Alaska Coastal Management Program during the permitting process.

3.2 Biotic Communities

3.2.1 Vegetation

Existing Conditions: No plant species found in the project area are considered unique, rare, or sensitive. The majority of the plant communities in undisturbed areas are forested. Specific plant community types include birch forests, spruce/alder forests, and birch/spruce forests. Dominant vegetation in the forested areas include white spruce, paper birch, alder, devil's club, common horsetail, fireweed, oak fern, and bunchberry. In general, areas near the gravel pits have been stripped of vegetation and topsoil. Vegetation found reestablishing along edges or inactive areas include yarrow, timothy, clover, foxtail barley, and willow.

Impacts: Under the Proposed Action, vegetation would be disturbed during site preparation, construction activities, and installation of new railroad track. Near Wasilla Creek, large trees would be cut or trimmed to provide adequate clearance under and adjacent to the bridge. The effects of ROW clearing activities are considered minor. In certain areas, rails, ties, and ballast would be removed from the old track structure. In areas of realigned roadway, existing roadway would be abandoned, cleaned up, and seeded. The areas where old railroad and roadway would be removed and revegetated are generally located between MP 156 and 158. The old track between MP 154 and MP 156 would be retained as a siding; no new vegetation would be introduced along this segment. The gravel pit area is proposed for construction staging and materials stockpiling for the eastern portion of the project and causes no vegetation impacts. The vacant field near MP 157, which is a former farm field with early successional growth, is proposed as a stockpile/construction staging area for the western half of the project. Table 3-1 shows the vegetation impact caused by the rail embankment, the staging/stockpile area near MP 157, and the Fairview Loop T-intersection embankment, along with areas of vegetation reseeding.

Mitigation and Authorizations: Areas with new fill material would be revegetated with native plant species to reduce erosion and windblown dust, which would partially mitigate disturbance to vegetation along the new realignment route. Techniques that encourage natural revegetation would be employed, except on the top several feet of the embankment slopes, which would remain unvegetated. Annual ryegrass, a nonpersistent exotic species effective for short-term erosion control, may be used while native species are establishing. Native seed mixes used would be weed-free.

Table 3-1: Area (in Acres[1]) of Upland Vegetation to be Cut/Filled or Revegetated

Alternative	Rail Embankment Impact[2]	Staging/Stockpile area near ARRC MP 157 Impact	Fairview Loop T-Intersection Embankment Impact[3]	Total Vegetation Impact	Vegetation Reseeding in abandoned ARRC ROW and Staging/Stockpile area
Proposed Action	24	9	4	37	16
Alternative 2	22	10	4	36	18
Alternative 3	27	9	4	40	18
No Action Alternative	None	None	None	None	None

1. Acreages are approximate and subject to minor adjustment during final design.
2. An additional 0.6 acres of vegetation disturbance would occur at the Fairview Loop Road overpass if the project is constructed in phases (because the road would have to climb up higher to get over the tracks, thereby requiring a slightly larger fill footprint).
3. Acreages include an additional 5 feet on each side of the toe of the embankment that would be impacted by construction equipment and placement of silt fence or similar control for preventing sedimentation of adjoining wetlands.

3.2.2 Wetlands and Waterbodies

Existing Conditions: Although the project area is mostly located in upland habitat, a few wetland areas exist. Wetlands were delineated (HDR 2004b) based on fieldwork, an examination of aerial photography, and the USFWS National Wetlands Inventory (NWI) mapping. Affected plant communities in the project area include birch/sedge forest wetland, open shrub/sedge wetland, spruce/alder forest (upland), birch/spruce forest (upland), and disturbed willow/grass and barren ground community (upland).

Wasilla Creek, in the eastern part of the project area, is a water of the U.S. A birch/sedge forest wetland was found along the Wasilla Creek floodplain. The vegetation is hummocky, with slightly drier hummocks separating lower wetter areas. Common herbaceous plant species found in the lower areas include Merten's sedge and bluejoint reedgrass. The slightly higher areas support paper birch, alder, prickly rose, and northern red current. This wetland provides stream flow regulation, filters sediments from the stream channel, and provides riparian habitat beneficial to fish.

An open shrub/sedge wetland is located at the toe of slope of the existing railroad track near MP 156 west of Fairview Loop Road. Aerial photographs indicate stunted vegetation typical of a bog. Dominant vegetation in this area includes black spruce, dwarf birch, and bog blueberry. Wetlands in this area accept drainage from the adjacent hillside including the railroad embankment and runoff from Fairview Loop Road. These wetlands provide filtering functions from road runoff and habitat values.

Additional waterbodies include excavated open water ponds in the gravel pit areas. These gravel extraction ponds are isolated and are not considered jurisdictional wetlands requiring a USACE permit.

Impacts: Minor impacts to wetlands would occur under any of the build alternatives. The crossing of Wasilla Creek would require filling approximately 0.16 acres of wetlands to construct bridge abutments and pier footings (see Figure 2.2). Table 3-2 provides a summary of wetlands impacts for the three action alternatives. Temporary construction-related impacts to wetlands are addressed in Section 3.4. The No Action Alternative would have no impact on wetlands.

Table 3-2: Wetlands Impacts

Wetland Type Description *(and location)*	Proposed Action Acres of Impacts	Alternative 2 Acres of Impacts	Alternative 3 Acres of Impacts
Birch/sedge forest wetland *(at the Wasilla Creek Crossing)*	0.16 acres	0.16 acres	0.16 acres
Scrub/shrub wetland *(MP 157/ Fairview Loop Road area)*	0.03 acres	0.03 acres	0.29 acres
Total Wetlands	0.19 acres	0.19 acres	0.45 acres

1. Acreages are approximate and subject to minor adjustment during final design.

Mitigation and Authorizations: The Proposed Action would require a Section 404 permit to discharge fill into waters of the U.S. To minimize impacts to wetlands, the ARRC would:

1. Use a longer bridge structure to span more of the braided channel complex and riparian wetlands associated with Wasilla Creek;
2. Use vertical abutment walls for the bridge to limit the footprint of fill material;
3. Taper the embankment width down near the crossing to minimize impacts to wetlands at the crossing; and
4. Clearly identify the vegetation clearing and construction limits (boundaries) in wetlands or other waters of the U.S. by staking, flagging, and/or fencing to ensure no physical disturbance occurs beyond the project limits authorized by the USACE permit.

Also, ARRC would perform a drivability analysis during design to determine if use of steel pipe piles for the bridge piers is feasible; this would further impacts to wetlands in the riparian wetland area of the creek. Completely avoiding wetlands was determined to be impracticable because the additional construction cost and the long-term maintenance burden associated with spanning the entire complex far outweighed the marginal benefits to wetlands.

In consultation with agencies regarding Wasilla Creek fish and riparian habitat, ARRC agreed to fish habitat mitigation. The USACE indicated that the mitigation for EFH would also satisfy potential wetland mitigation requirements. See more in the EFH Assessment (HDR 2004a) and Section 3.2.3.

3.2.3 Fish and Essential Fish Habitat

Existing Conditions: EFH for three of Alaska's salmon species exists in Wasilla Creek: chum salmon, chinook salmon, and coho salmon. The middle reaches of Wasilla Creek are spawning habitat for chum salmon, and the upper and lower reaches are rearing habitat for coho salmon. The project crosses the lower reach. Chinook salmon have been documented in this portion of Wasilla Creek (Davis and Muhlberg 2002). Two active side channels flow through the riparian habitat found in the project area. This portion of Wasilla Creek also provides migratory fish passage for other salmon species that spawn in the Wasilla Creek drainage upstream of the proposed crossing. Resident Dolly Varden are likely present in the creek. In the project area, Wasilla Creek is impacted with high levels of silt and embeddedness, likely due to the agricultural and urban land uses upstream.

Impacts: Under the Proposed Action, the bridge crossing of Wasilla Creek would be designed to allow continued fish passage through the main channel and middle side channels, with no modification. Piers and abutments would be located to avoid impacts to those channels. Completely avoiding all impacts to EFH and adjacent riparian wetlands was determined to not be practicable because of the additional cost of the longer bridge and additional long-term maintenance burden to ARRC. The Proposed Action would span the main channel and middle side channel, requiring filling of a portion of the west side channel. Without mitigation, that fill would cut off the water supply to the entire west side channel eliminating the coho rearing habitat provided there. To minimize the impacts, the ARRC would realign the channel under the bridge to maintain water in this channel downstream from the crossing, recreating most of the impacted EFH. Figure 2.2 depicts the proposed crossing and stream restoration.

With proposed mitigation, 160 linear feet (0.03 acres) of stream habitat (West side channel) is impacted, 60 linear feet (0.02 acres) is recreated, and the downstream habitat of the west side channel is maintained. There would be a net loss of 100 linear feet (0.01 acres) under bridge. This amount of habitat or more would be added within the Wasilla Creek watershed through off-site mitigation resulting in no net loss of EFH overall at a location determined in consultation with NMFS, USACE, and ADNR representatives prior to permits being issued.

The same creek crossing used in the Proposed Action would be used for Alternatives 2 and 3, and therefore, would have identical impacts at Wasilla Creek. The No Action Alternative would have no impact on fish or EFH.

Mitigation and Authorizations: Stream impacts and restoration as mitigation has been coordinated with appropriate regulatory agencies (including NMFS and USACE) to minimize impacts to the west side channel resulting in no net loss of EFH. Based on the analysis and coordination, ARRC and FTA concluded that there would be no adverse impact to EFH. ARRC agreed to no net loss of EFH, and would realign the west side channel under the bridge to recreate most of the EFH. Based on the agency consultation and standard ARRC practices, the ARRC would implement conservation and mitigation measures to avoid adverse impacts to EFH. See Appendix 5 (Biological Environment) for these measures or Section 3.4 for the mitigation measures related to construction. In addition, more requirements may result from the permitting process.

3.2.4 Wildlife

Existing Conditions: Moose are abundant in the Wasilla area and use a large variety of habitats, including stream valleys, lowlands, and south-facing foothills. Moose forage on vegetation common in the project area. Some moose are killed by train accidents each winter in the vicinity of the project, when the moose use the snow-free tracks. Both black and brown bear are found in the Wasilla area, with black bear the more abundant species. The growth of rural subdivisions in the Wasilla area has provided a source of food/garbage for black bear, and has infringed on their habitat. Fox, hare, coyote, mink, weasel, muskrat, and beaver all have been known to frequent the area.

Impacts: Under the Proposed Action, potential affects to wildlife habitat may occur from vegetation clearing. Removal of vegetation could alter the density of browse plants for herbivores and cover for small mammals, or disturb animals due to noise or human presence during construction. Mobile species would be displaced to the similar abundant habitat in adjacent areas. Long-term impacts to the population dynamics of wildlife species are expected to be negligible.

The new embankment could alter movement patterns of local animals, since the top of the embankment would be higher than the surrounding area. However, the embankment would be unlikely to create a barrier to wildlife movement. The area near the Wasilla Creek complex is good for funneling wildlife and moose through from the surrounding area. The new bridge crossing would be long enough for continued wildlife passage and would not be a barrier to wildlife movements.

Table 3-1 identifies the acreages of upland habitat impacted and revegetated by the three action alternatives. The Proposed Action and Alternative 2 do not vary substantially in the potential affect to wildlife from vegetation clearing. Alternative 3 would have the most acreage impact and the least amount of habitat revegetated. In addition, less than one acre of wetlands habitat would be affected for all of the build alternatives. The No Action Alternative would have no impact to wildlife. The impacts to moose are not expected to be significant for the Proposed Action or Alternatives 2 or 3 and not anticipated to vary appreciably from the No Action Alternative.

Mitigation and Authorizations: ARRC would continue to mitigate potential impacts to moose by complying with the 1991 Cooperative Agreement between the ARRC and the ADF&G. This agreement established a plan of action to be taken annually to limit the number of moose killed by trains.

3.2.5 Protected Species

Existing Conditions: The USFWS indicates that there are no listed endangered species or Alaska Species of Special Concern in the project area (USFWS 2003 and 2004). NMFS confirmed that there are no threatened, endangered, or candidate species located in the project area under NMFS jurisdiction (NMFS 2004a).

Impacts: No endangered, threatened, or other federally protected species would be affected by any of the action alternatives or the No Action Alternative.

Mitigation and Authorizations: No mitigation is necessary.

3.3 Human Environment

3.3.1 Existing and Planned Land Uses and Zoning

Existing Conditions: The portion of the project area within the Wasilla city limits, from approximately MP 156.5 to MP 158, is zoned and intended to be used for residential, commercial, and industrial land use. Land owned by various private landowners is used primarily for rural residential purposes and associated uses. The ARRC ROW is used for railroad (transportation) purposes. A parcel of land owned by the City, which houses the sewer treatment plant, and just west of MP 157 is zoned industrial.

Land use outside the city limits of Wasilla but within the Mat-Su Borough, includes residential, vacant land, and commercial-industrial. Two commercial gravel pits are southeast of MP 156. Near the intersection of Fairview Loop Road is the Carson Farm, a modern working farm with residential and farm-related structures. The farm was originally part of the Matanuska Colony Project and its land use is residential. The Borough has planning powers but has not adopted zoning provisions.

The City of Wasilla has been interested in relocating the railroad line out of the downtown area and commissioned a study in 2002 entitled "Wasilla Alaska Railroad Relocation" (City of Wasilla 2002). In the spring of 2003, the steering committee identified the South Wasilla Track Realignment as one of six projects to move forward for engineering and environmental analysis (ARRC 2003).

Impacts: The Proposed Action traverses vacant, residential, and commercial (gravel pit) land. Most of the vacant land is planned or anticipated to be used for residential purposes. The required project ROW would take that residential property out of future potential use. Given the large numbers of other vacant residential parcels available in the vicinity, the project would have little to no impact on future residential land supplies.

The ROW acquired from the gravel pits owners would take that property out of use for commercial gravel extraction purposes. The owners would likely extract gravel from the proposed ROW prior to acquisition and/or it would be used for the project and the property owners compensated. Therefore, the commercial value in that property would be realized. The gravel resource would be used, the owners compensated, and the project would have little overall affect on commercial gravel resources. Road underpasses would allow access under the proposed railroad embankment of those large parcels, and gravel extraction operations would not be substantially affected in areas outside of the proposed ROW. No re-zoning action would be necessary for realigning the railroad within the City of Wasilla boundary (City of Wasilla 2004b). The new ROW would need to be replatted but would not need to be rezoned.

Four residential properties along East Jude Drive would be acquired. These owners would be compensated and given relocation assistance. A single-wide manufactured home (residential land use) located partly in the ARRC ROW near Fairview Loop Road would also need to be relocated. Given the large number of other vacant residential parcels available in the vicinity, relocating these residents would have little impact on future residential land supplies.

Regarding the City's goal to relocate the ARRC tracks out of downtown, the Proposed Action roughly follows the corridor of the City's preferred study option (Option E) (City of Wasilla 2002) on the east end of the City's corridor, and would not preclude the eventual completion of that alignment west of this project's study area. The project is consistent with the ongoing planning efforts of the City and Borough regarding their studied realignment.

Alternatives 2 and 3 have similar impacts to the Proposed Action. On the eastern half of the project (approximately MP 154 to MP 156), Alternative 2 is nearly identical to the Proposed Action, while Alternative 3 provides a straighter alignment. The alignment of Alternative 3 varies the location where the gravel pits are affected, but does not appreciably change the affects. Alternative 3 is nearly identical to the Proposed Action between MP 156 and 158, affecting residential property along East Jude Drive. Alternative 2, is slightly farther north in this segment, affecting 2 residential properties along East Danny's Avenue but does not have appreciably different affects on land use than the Proposed Action. No change in land use would occur under the No Action Alternative.

Mitigation and Authorizations: Acquisition of properties and relocation of individuals displaced as a result of this project would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and the Alaska Relocation Assistance and Real Property Acquisition Practices, A.S. 34.60.010 et seq. Underpasses through the embankment would allow continued access to gravel extraction operations and residential areas. No other mitigation is proposed.

3.3.2 Land Ownership (Right-of-Way and Relocation)

Existing Conditions: The project area has five primary types of land ownership: the Mat-Su Borough, the City of Wasilla, private landholdings, the Alaska Department of Transportation (DOT&PF), and the ARRC. The majority of the land ownership in the project area is private. Near MP 157, the City of Wasilla owns the land that houses the sewer treatment plant and the Mat-Su Borough owns a small parcel of land. Old Matanuska Road and Fairview Loop Road are owned by DOT&PF. The ARRC owns a 200-foot wide ROW centered along the existing tracks. Because of impending development in the southeast portion of the project area (Creekside Preserve), ARRC initiated a protective acquisition and purchased 11 lots.

Impacts: The number of potential displacements and corresponding information currently anticipated has been identified by using Mat-Su Borough's tax assessor's data. The Proposed Action would require acquiring property from 23 parcels. ROW impacts may be subject to minor adjustment during final design. Between the western edge of the protective buy and near MP 156 (where the alignment reenters the ARRC ROW) vacant property would be acquired but no structures are anticipated to be taken. At the Carson Farm, at the intersection of Fairview Loop Road and the tracks, no property would be acquired, but an existing single-wide manufactured home partly within the ARRC ROW would need to be moved. To realign Fairview Loop Road, vacant property on the west side of the road would be acquired and the road shifted west away from the farm buildings. Up to this point, Alternative 2 is nearly identical to the Proposed Action. Alternative 3 varies slightly through this segment and would require acquisition of a portion of the Carson Farm; in addition to the manufactured home, two other farm buildings would likely be affected.

To the west of the Fairview Loop Road crossing, the Proposed Action would require acquisition of vacant property from a large parcel along the north side of Old Matanuska Road. Eight parcels along East Jude Drive just north of the sewage treatment plant would likely be acquired in their entirety and East Jude Drive closed, although this is subject to negotiation with the property owners. Four of these properties include residential structures, and the occupants would be relocated. To the west of East Jude Drive, sliver takes of property may be required on the south side of the existing tracks to accommodate the embankment of the straighter track. Through this segment, Alternative 3 is nearly identical to the Proposed Action. Alternative 2 does not affect the properties along East Jude Drive, but the alignment traverses slightly further north. The uphill embankment cut would affect two homes along East Danny's Avenue, requiring the acquisition and relocation of one residence.

Under the No Action Alternative, the ROW impacts would occur as already programmed in the approved Knik River to Wasilla Re-Alignment project. Approximately 0.82 acres of one parcel would be affected, which would be acquired as part of this already-approved minor curve alignment.

Many nearby areas are available to relocate affected residents (City of Wasilla 2004e). A review of aerial photography and site visits indicates there are a wide variety of housing types and prices found in Wasilla as well as vacant developable property to accommodate affected residents. Appendix 8 (Human Environment) provides a more detailed summary of ROW impacts.

Mitigation and Authorizations: Acquisition of properties and relocation of individuals displaced as a result of this project would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, and the Alaska Relocation Assistance and Real Property Acquisition Practices, A.S. 34.60.010 et seq. Once the project moves forward for design and construction, specific ROW impacts would be determined and the requirements of the Uniform Relocation Act would be met. The ROW requirements and costs would be refined during final design.

3.3.3 Socioeconomics

Existing Conditions: The project area is within the Mat-Su Borough, with slightly less than half of the project area within the Wasilla city limits. The Mat-Su Borough is Alaska's fastest growing area with a projected population of approximately 103,000 by the year 2015 (Duffy 2002). The Mat-Su Borough lacks a significant diversified economic base of its own. Its economy is primarily supported by residents who work outside the Borough rather than by the export of goods or services (Fried 2003).

To characterize the demographics of the potentially affected areas, 2000 U.S. Census data were collected and summarized. For analysis purposes, U.S. Census data could not be obtained solely for the project area. Therefore, for demographic analysis, the "project area" contains not only the project area, but also other areas adjacent the project area within requisite census blocks. Approximately 10,843 people live in the "project area." The percentage of the population in the project area that classified themselves as "White Alone" (87.8%) is greater than that of the state (69.3%), the City of Wasilla (85.5%), and about the same as the Mat-Su Borough (87.6%) as a whole. The average per capita income of the project area is similar ($21,712) as that of the City of Wasilla ($21,127), slightly less than the state ($22,660), and slightly more than that of the Mat-Su Borough ($21,105). At $56,193 the average median household income of the project area is higher than that of the state ($51,571), the Mat-Su Borough ($51,221), and the City of Wasilla ($48,226). See Appendix 8 (Human Environment) for a more detailed summary of population, race, and poverty data for the State of Alaska, the Mat-Su Borough, and the project area.

Impacts: The Proposed Action would not generate long-term population growth in the community or change area demographics, primarily because it would not create any new requirements for support of railroad operations in the community or affect current levels of ARRC operations employment.

The Proposed Action would have minor social impacts, primarily due to the acquisition of residential properties along East Jude Drive and the displacement of residents. Displaced persons are anticipated to be relocated within the area so little to no impact on property tax revenues is expected. No neighborhoods are split by the alignment, so there is no impact or change to community cohesion. See more in Section 3.3.1 "Existing and Planned Land Uses and Zoning" and Section 3.3.2 "Land Ownership (Right-of-Way and Relocation)". Neighborhoods fronting the existing alignment would benefit by having an easier and safer opportunity to cross the tracks once mainline train traffic shifts to a fully grade-separated alignment. There would be no affect on school districts, recreation areas, or churches.

The only affected businesses are the two commercial gravel pits. Construction activities and purchase of gravel are likely to have an overall positive affect on the local economy.

No long term changes in population growth or demographics are anticipated. Trains currently require about 10 ½ minutes to travel through the area. The Proposed Action would reduce this time by about six minutes in either direction, which would benefit rail passengers and the ARRC.

Alternatives 2 and 3 do not vary appreciably on their affects to the socioeconomic environment as compared to the Proposed Action.

Under the No Action Alternative, socioeconomic conditions would not change. The existing safety concerns, the risks of derailment and release of hazardous substances, and high noise levels would continue. This alternative would also hinder the ability to meet future rail needs between Mat-Su Valley and Anchorage. Future development of commuter rail would be unlikely to occur, as train speeds would not increase sufficiently to make this service feasible. This would limit the transportation and economic benefits that would occur if commuter rail was initiated in the future.

Mitigation and Authorizations: No mitigation is proposed and no authorizations are required.

3.3.4 Environmental Justice

Existing Conditions: Race and income data in the project area, to the most refined geographic subset available, were collected and compared to data for the State of Alaska, the Mat-Su Borough, and the City of Wasilla[1] to determine if any minority or low-income communities existed in the project area that could be disproportionately affected by the Proposed Action. Race data for the project area, which is available to the census block level, and median household income data, which is only available to the block group level, is detailed in Appendix 8 (Human Environment).

Impacts: In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, the potential for adverse effects on the health or environment of minority and low-income populations has been considered. The analysis indicates that disadvantaged segments of the population would not be disproportionately affected by the build alternatives.

Mitigation and Authorizations: Efforts would be made to continue involving the public through meetings and hearings, with special emphasis on inviting the affected residents/property owners. No other mitigation is proposed.

[1] The City of Wasilla relies on the U.S. Census for their socioeconomic data (City of Wasilla 2004d).

3.3.5 Transportation Systems

Existing Conditions: Several roads run through this primarily rural residential area. The affected roads of interest are where the proposed grade-separated crossings would be. Old Matanuska Road has a "rural local" functional classification and is operated and maintained by DOT&PF. Fairview Loop Road, also operated and maintained by the DOT&PF, is classified as a "rural major arterial." The road leading to the City's sewage treatment plant and East Jude Drive are operated and maintained by the City of Wasilla and function as local access roads. The existing roadway network and relevant 2002 average daily traffic within the project area are detailed in Appendix 8.

The mainline of the ARRC runs through the City of Wasilla just south of the Parks Highway. Existing and forecasted daily rail traffic through the project area is detailed in Appendix 8.

Planned Transportation Projects: The ARRC ROW is considered by the City to be a barrier preventing balanced growth on both sides of the tracks (B & B 1992). As part of the City's Comprehensive Plan, it was recommended that the City and Borough work with the ARRC to facilitate the eventual realignment of the tracks south of the City.

Several road improvement and rehabilitation projects in the Wasilla area are called for in recent DOT&PF planning projects (DOT&PF 2003 and DOT&PF 2002). The Mat-Su Borough Long Range Transportation Plan (1997) discusses the upgrading of Old Matanuska Road as a necessary enhancement to be completed in the next decade. These future road needs are anticipated because travel demand is expected to exceed roadway capacity. The extension of Seward Meridian Parkway to Old Matanuska Road is one project anticipated to be built in the near future.

As mentioned previously, the City of Wasilla has studied realigning the railroad through the study area. While the study is not in an adopted plan, the City's preferred corridor roughly follows Proposed Action alignment.

Impacts: The Proposed Action would have a beneficial impact on local road networks. The grade separation of Fairview Loop Road and the grade separated crossing to the City's sewage treatment plant would enhance safety, with the decreased risk of train and motor vehicle collisions and reduction of curvature, which leads to a decreased risk of derailment. Realigning Old Matanuska Road is consistent with adopted plans and would improve safety by reducing roadway curvature. The road design should be coordinated with a DOT&PF project to extend Seward Meridian Parkway to Old Matanuska Road to ensure a compatible design and minimize potential conflicts during construction. Impacts to the traveling public could include temporary road closures and delays during construction (see more in Section 3.4).

The Proposed Action alignment is consistent with the City's preferred study option. The grade separated crossings providing access to the gravel pits would be designed to have the right clearances and dimensions to accommodate a two-lane local road for future residential road access. The existing track between MP 154 and MP 156.6 would remain in place as a siding for temporary use. Alternatives 2 and 3 would have transportation impacts similar to the Proposed Action.

Under the No Action Alternative, no changes to the existing infrastructure would occur, and transportation systems and facilities would remain as they exist, including five at-grade crossings on the main line track. The purpose and need for the project of increased operational efficiencies and safety would not be realized with the No Action Alternative.

Mitigation and Authorizations: The ARRC would coordinate efforts with the DOT&PF and City of Wasilla in the realignment of Old Matanuska Road. The overpass and road realignment to the City's sewage treatment plant and the Fairview Loop Road realignment would be coordinated during design and construction with the City of Wasilla and the DOT&PF respectively.

3.3.6 Noise and Vibration

A noise and vibration assessment of potential impacts associated with the alternatives was conducted in accordance with the *Transit Noise and Vibration Impact Assessment (DOT-T-95-16)* guidance manual developed for the FTA in 1995. The Noise and Vibration Impact Assessment (HMMH 2004) and a detailed summary of that report are provided in Appendices 9 and 8, respectively.

3.3.6.1 Noise

Existing Conditions: Existing noise sources along the corridor are roadway traffic, aircraft overflights, railroad operations and local neighborhood activities. They include highway vehicles in the north, trains (including whistles at the at-grade crossings), and industrial noise at gravel pits. There are five at-grade crossings where the train engineer is required to blow the signal horn. FRA regulations require that the train's warning signal produce a minimum level of 98 decibels, which is a measurement of strength or the loudness of sound. The signal horn is the loudest and probably the most objectionable aspect of train noise, creating the loudest momentary noise event observed around most trains. Any reduction of signal horn use has a positive effect for the local noise environment. Based on long-term (24-hour) monitoring conducted at four sites in March 2004, ambient noise levels range from 49 dBA to 70 dBA (Table 3-3).

Table 3-3: Summary of Existing Ambient Noise Measurement Results

Site Description	Noise Exposure Ldn (dBA)
Near MP 154	53
South of the gravel pits	49
South of the existing alignment, between ARRC MP 155 and 156	61
Near the City sewer treatment plant	70

Impacts: The assessment of noise impacts is based on a comparison of existing and projected future noise exposure to FTA's noise impact criteria for transit projects. Table 3-4 summarizes projected noise impacts for the year 2025. Impacts during winter and summer conditions were assessed, since ambient noise levels are typically higher in the summer than the winter. The Proposed Action would have no noise impacts, and Alternative 2 and 3 would each have one moderate impact.

The No Action Alternative is projected to have extensive moderate and severe impacts, primarily due to train horn noise at the at-grade crossings. The general locations where these impacts would occur are as follows: homes in the Garden Terrace Subdivision in the vicinity of the Abby Boulevard crossing, homes in the vicinity of the Fairview Loop Road Crossing, and homes near the sewage treatment plant crossing in the vicinity of Danny's Avenue and Jude Drive.

Mitigation and Authorizations: The noise impacts for the Proposed Action and build alternatives are based on the assumption that ARRC purchases a 200-foot ROW. No additional mitigation is proposed.

Table 3-4: Noise Impact by Number of Residences Impacted

Alternative	Winter 2025		Summer 2025	
	Moderate[1] Impact	Severe[2] Impact	Moderate Impact	Severe Impact
Proposed Action	0	0	0	0
Alternative 2	0	0	1	0
Alternative 3	0	0	1	0
No Action Alternative	11	22	14	30

1. Moderate impacts are not considered significant under NEPA. FTA allows discretion in applying mitigation measures for impacts at this level.
2. Severe impacts would be considered significant under NEPA and would require mitigation unless there is no practical method to mitigate the noise.

3.3.6.2 Vibration

Existing Conditions: Trucks using the gravel pits and freight and passenger trains operating through the area are the primary sources of existing vibration. Existing vibration measurements were taken at two sites; Site 1 was near the grade crossing on Jude Drive and is representative of the ground characteristics for the receptors on the west side of the project area and Site 2 was near the grade crossing on Abby Road and is representative of the ground characteristics for the receptors on the east side of the project area. The results suggest that for infrequent events (fewer than 70 vibration events per day), residential buildings in the study area closer than about 125 feet to the tracks would experience vibration impacts (above 80 VdB) expressed in terms of velocity level in decibels or VdB. There are 14 residential buildings currently estimated to be impacted by vibration.

Impacts: Table 3- presents projected vibration impacts forecasted for the year 2025 for the project alternatives. The project area has similar vibration characteristics in summer and winter, so vibration impacts would be identical in both seasons.

Table 3-5: Vibration Impact by Number of Residences Impacted*

Alternative	Winter / Summer 2025
	Impact
Proposed Action	1
Alternative 2	4
Alternative 3	1
No Action Alternative	14**

* Impacts that are outside the proposed 200-foot ROW.
** The impacts under the No Action Alternative are existing locations where the vibration levels would exceed the impact criterion based on forecast conditions.

For the Proposed Action, the only affected property is already impacted by the existing track and would continue to be impacted under the No Action Alternative. The change in vibration level between the No Action Alternative and Proposed Action is only higher by 1 VdB, a change that would not be perceptible to the residents. The vibration impacts all relate to human annoyance and perception and not to structural damage from vibration. Criteria for structural damage from vibration are well above the vibration levels projected as a part of this project, even for the most fragile historic structures.

Under the No Action Alternative, there would continue to be 14 impacts, which are existing locations where the vibration levels exceed the impact criterion.

Mitigation and Authorizations: The vibration impacts for the Proposed Action and build alternatives are based on the assumption that ARRC purchases a 200-foot ROW. No additional mitigation is proposed.

3.3.7 Utilities

Existing Conditions: Although the City of Wasilla operates a piped water and sewer system, the majority of homes in the project area use individual water wells and septic systems (City of Wasilla 2004c). Refuse collection is provided by a private company for disposal in the Borough landfill. Matanuska Electric Association is part owner of the Alaska Electric Generation & Transmission Cooperative, Inc. The City of Wasilla sewer treatment plant is located near MP 157. A 16-inch diameter sewer line is located north of the East Jude Drive crossing. Overhead utility lines exist throughout the project area, running adjacent to the railroad between MP 155 and 156, at MP 156, near MP 157, and near MP 158. A fiber optic cable runs the entire length of the existing tracks from Anchorage to Fairbanks.

Impacts: Under the Proposed Action, the track would cross over the 16-inch diameter sewer line, which may need to be realigned and reinforced or protected due to the increased weight of the railroad and reconstruction of the access road to the treatment plant. The fiber optic cable may require relocation in areas where the existing track requires reconstruction or the new track conflicts with the cable. Overhead lines and natural gas lines at the Fairview Loop and East Jude Drive crossings would need to be relocated. Temporary scheduled shutdowns of service may be required during construction.

Alternatives 2 and 3 would have similar utilities impacts as the Proposed Action. Under the No Action Alternative, no impacts to utilities would occur.

Mitigation and Authorizations: Design and construction would be coordinated with appropriate utility companies. Efforts would be made to minimize the utility disruptions by timing work and outages to low use time periods. Residents and other utility customers would be notified in advance of construction activities requiring temporary shut downs of service.

3.3.8 Archeological and Historic Sites

Existing Conditions: A cultural resources survey of the project area was conducted in August 2003 and May 2004 (Cultural Resources Consultants 2004a). In 1916 or 1917, the Alaska Railroad was built through MP 154 to 158 leading to expanded settlement of the region. The Matanuska Colony project, also known as the Alaska Rural Rehabilitation Corporation Program, encouraged farming in the area in the early 1930s (Cultural Resources Consultants 2004b). There are seven documented Alaska Heritage Resources Survey (AHRS) sites in the vicinity of the project. Most of these properties are associated with the Matanuska Colony Project and were originally settled in the early 1930s.

Field observations indicate that much of the proposed ROW in the project area has been previously disturbed. Old spoil piles, terracing, and clearing were observed during the field reconnaissance. Other field observations included two active gravel pits, the remains of an old railroad siding, and a modern footpath (Cultural Resources Consultants 2004a). Cultural Resources Consultants indicated that the Carson Colony Farm (ANC-139) is eligible for listing in the National Register because of its association with the Alaska Rural Rehabilitation project. Contributing elements of the Carson Colony Farm included the original 40-acre farm (1935), the farmhouse and barn (1935), and the second chicken coop (1938).

Impacts: Section 106 consultation between FTA and the Alaska Department of Natural Resources, Office of History and Archaeology State Historic Preservation Office (SHPO) occurred in July and August 2004. On June 8, 2004, FTA initiated government-to-government coordination with the Knik Tribal Council, a federally recognized tribal government, to solicit comments and concerns regarding the proposed project and potential impacts to cultural resources. The ARRC also sent letters on June 9, 2004 to other Alaska Native entities in the area – Cook Inlet Region Inc. and Knikatnu, Inc. No responses were received. A public scoping meeting was held on July 23, 2003.

The Proposed Action would have no effect on any known historic property. The one National Register-eligible property in the immediate project area – the Carson Colony Farm – would not be adversely affected by the Proposed Action (ADNR 2004b). The Proposed Action would remain in the current railroad ROW where the alignment passes north of the farm. On August 26, 2004, SHPO concurred that neither the Proposed Action nor Alternative 2 would adversely affect historic properties.

The Alternative 3 alignment would impact the Carson Colony Farm parcel. It would cross the field located on the parcel and could disturb the northernmost farm buildings. If Alternative 3 were selected, further agency coordination and research would be required and the architectural characteristics of these buildings would need to be assessed (ADNR 2004b). Under the No Action Alternative, the alignment would not change and no cultural resources would be affected.

Mitigation and Authorizations: Should construction activities unearth any archaeological or cultural resources, construction would be halted in the immediate area, and SHPO would be contacted.

3.3.9 Recreation, Section 4(f) Properties, and Section 6(f) Properties

Existing Conditions: There are no designated federal or state parks or refuges located in the project area. One historic site, the Carson Farm, is in the project area, but SHPO has indicated there would be no adverse effect on the property under the Proposed Action or under Alternative 2. There are no facilities developed using LWCF monies (ADNR 2004a) and no designated recreation sites in the project area.

Impacts and Mitigation: The Proposed Action, Alternative 2, and the No Action Alternative would not affect Section 4(f) or 6(f) properties or recreational resources, and therefore, no mitigation is proposed. Alternative 3 would have an adverse effect on a historic property found eligible for the National Register (a Section 4(f) property).

3.3.10 Contaminated Sites

Existing Conditions: A limited investigation of potential contamination, underground storage tanks, and leaking underground storage tanks was conducted through a review of existing federal, state, and local documentation. No documented sites were revealed (ADEC 2003b and U.S. EPA 2003). Further, observations during field visits in 2003 and 2004 did not identify any apparent contamination. No evidence of contamination was observed or reported within the project area. The project area was relatively free of discarded material of any type.

Impacts and Mitigation: Further investigation into the potential for contamination would be conducted prior to property acquisition. In the event contamination is encountered during construction, it would be addressed in accordance with applicable state and federal regulations.

3.3.11 Visual

Existing Conditions: The visual qualities of the project area are characterized by the land uses of two gravel pits; the sewer treatment plant; the railroad tracks; the Garden Terrace and Creekside Preserve residential areas; and pockets of other residential areas. The Chugach Mountains can be seen to the southeast from several stretches of the rail line and Old Matanuska Road, which sits on a bluff. The Talkeetna Mountains rise to the north and east.

Impacts and Mitigation: Visual impacts occur when changes in the landscape are noticeable to viewers looking at the landscape from homes, preservation areas, highways and travel routes, and important cultural features and historic sites. Viewsheds would change, but would still include a rail line, the gravel pits, sewage plant, and other prominent features of the project area. The new features would be most

visible to residents at the southern end of Sweetie Pie Street in the Creekside Preserve Subdivision, where the proposed embankment could be as high as 35 feet where it crosses Wasilla Creek. This subdivision is in lowlands, adjacent to Wasilla Creek and is heavily treed, so residents likely have limited viewsheds. Residents of the southern-most two or three properties (directly north of the advanced acquisition) may see portions of the rail embankment through the trees near Wasilla Creek. The embankment would likely be screened from view from other residential properties by vegetation or other homes.

3.4 Construction

Construction activities associated with the Proposed Action and other build alternatives (Alternative 2 and 3) could have short-term impacts on noise levels, air and water quality, traffic congestion and detours, safety, and the local economy. These impacts would be temporary, existing only for the duration of construction. This section describes the impacts and identifies appropriate mitigation measures.

- Air quality impacts would be temporary and would come primarily from emissions from diesel-powered construction equipment and dust from embankment, haul road, and staging/stockpile areas. Proposed staging and stockpiling areas in the gravel pit area would have little to no greater impact to surrounding areas than the gravel pit operations. Staging and stockpiling near MP 157 is not adjacent to any developed residential structures. Hauling of material would occur within the proposed ROW or on public roadways. Ground-disturbing activities such as vegetation removal, excavation, grading, and fill placement may temporarily generate fugitive dust. Airborne particles would be controlled as necessary by the application of water or other controlled materials for dust suppression in accordance with established BMPs.

- Noise and vibration impacts would result from heavy equipment movement and construction activities such as pile driving and vibratory compaction of the embankments. The contractor would use standard equipment with mufflers and would make certain that equipment is in good operating condition. Construction noise would be minor in this rural residential and industrial area and would be temporary in duration.

- Vegetation clearing, grading of fill slopes and grading and excavation associated with construction activities are the most likely sources of potential erosion and sedimentation impacts. Vegetation impact would occur within the proposed right-of-way. Soil erosion could occur within the construction zone of the proposed project area, but would be a temporary, short-term impact. Water quality impacts resulting from erosion and sedimentation would be controlled in accordance with established BMPs. BMPs would include installing temporary erosion control measures such as wood excelsior mats, straw bales, and/or silt fencing until vegetation can bind the soil or diversion dikes divert storm water away from the disturbed soils. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for the project to obtain coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. No significant impacts to water quality are expected to result during construction activities. An ADEC Section 401 Water Quality Certification (Certificate of Reasonable Assurance) would be required for the project, and ARRC and its contractors would abide by stipulations included in that certification. Construction materials would be obtained from ARRC material source sites, or approved, commercial sources. Numerous commercial sources meeting the needs of the project are available in the greater Wasilla area.

- Excavation dewatering may be performed during construction activities (particularly to construct proposed stream reconstruction mitigation), which could require an ADEC General Wastewater

Disposal Permit for excavation dewatering. Appropriate BMPs would be implemented to prevent scour erosion and sediment transport and to protect surface water quality during dewatering.

- Construction of the bridge would involve use of temporary bridges laid down over the side channels and temporary impacts to wetlands. Temporary workpads may be built near the channels or on the islands between the side channels to accommodate pile driving or drilling equipment for pier and footing construction. Damage to riparian vegetation would occur to accommodate the temporary bridges and construction equipment. The Contractor would be required to revegetate these areas and they would return to a natural state in the long term. Construction mitigation measures for the bridge crossing of Wasilla Creek include:

  - All construction staging, fueling, and servicing operations would be kept a minimum of 100 feet from Wasilla Creek and the adjacent wetlands.
  - ARRC would implement a project construction sequence that would minimize the extent of exposed soil at any given time.
  - ARRC would use contaminant-free embankment and surface materials in construction.
  - ARRC would monitor construction activities to ensure that temporary impacts are minimized. ARRC would restore all temporary disturbance areas to pre-construction conditions following construction.
  - Material storage piles would not be placed in the 100-year floodplain.
  - Slopes with the potential to impact Wasilla Creek would be stabilized as soon as practicable.
  - To minimize and prevent spills or leakage of hazardous materials during construction, standard spill-prevention measures would be implemented during construction. To mitigate for potential hazardous materials spills, spill clean-up equipment (e.g., oil-absorbent pads) would be available onsite during construction.
  - Temporary bridging would be used. Streams would not be temporarily filled or culverted.
  - ARRC would avoid impacts to the main channel and middle side channel by constructing a bridge long enough to avoid modification to those channels. Fifteen-foot minimum setbacks from the stream banks to abutments would be used to protect riparian vegetation. A bridge meeting these requirements is estimated to be approximately 223.5 feet long.
  - Disturbed areas would be re-contoured to approximate original conditions and reseeded with native vegetation to minimize erosion and stabilize stream banks.
  - Construction would be timed to minimize any adverse effects to salmon during critical life stages. Timing windows identified in permit stipulations would be incorporated into construction specifications for all in-stream work. NMFS would prefer all in-water construction work to be done between October 1 and April 1, so that outmigrating salmon fry and smolt are not disturbed between April 1 to June 30 and adult salmon are not disturbed when entering Wasilla Creek in July through September (NMFS 2004b). The timing window may be adjusted in permit stipulations.

- Other minor adverse construction impacts include short-term delays for users of the current at-grade crossings. Temporary delays and detours would inconvenience the traveling public for short times during construction, but appropriate signage would be used to direct drivers to alternative routes. The public would be notified of road closings and other construction-related activities so that motorists, residents, and business people could plan travel routes in advance. A sign providing the name, address, and telephone of an ARRC contact person would be displayed on-site to assist the public in obtaining immediate responses to questions and concerns about project activities.

- Construction may have a minor beneficial economic impact by increasing local and regional employment and wage income. The number of positions and length of employment would vary depending on the construction schedule and the contractors selected. There may also be opportunities for local provision of construction materials, such as gravel/fill material, and other services related to construction, which could result in increased earnings for suppliers of materials and services locally and in the region.

- Visual impacts related to construction would include material storage and construction equipment. For nearby residents, these may be visually displeasing; however, this would be a temporary condition and should pose no substantial long-term impacts.

Alternatives 2 and 3 would have similar construction impacts, and would require the same mitigation measures as the Proposed Action. Construction impacts related to these alternatives are also expected to be minor.

The No Action Alternative would not have any construction impacts, with the exception of minor short-term impacts if the programmed realignment at Curve 157 is constructed.

3.5 Cumulative Effects

Federal regulations implementing NEPA (40 CFR 1508.7) define a cumulative effect (cumulative impact) as "the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." The following sections identify and describe potential cumulative effects that could result from the Proposed Action or the build alternatives (Alternatives 2 or 3) in combination with other past, present, or reasonably foreseeable future human actions or natural events near the south Wasilla area. These other actions and events are called *external actions* because they take place independently from the Proposed Action or the other build alternatives. By considering external actions that could interact with the alternatives, the cumulative effects analysis allows potential unintended consequences of the alternatives to be identified.

The cumulative effect analysis for the proposed project alternatives include:

- Definition of spatial (geographic) and temporal (time frame) boundaries of the analysis.
- Identification of past, present, and reasonably foreseeable future actions that could produce additive or synergistic environmental effects when combined with potential direct or indirect impacts of the alternatives.
- Description and discussion of potential cumulative effects of project alternatives on the physical, biological, and human environments.

For the purposes of this Cumulative Effects analysis, the geographic area is bound by the Parks Highway to the north and goes up to a mile south, and extends from the west near MP 158 and to the east to near MP 154. The time frame for consideration of future cumulative impacts is 10 years.

3.5.1 Past, Present, and Reasonably Foreseeable Future External Actions

Past and present external actions include planning efforts and improvements for both the railroad and Parks Highway through the Wasilla corridor, which includes the vicinity of the project area.

Reasonably foreseeable future external human actions and natural events that have been identified within the temporal and geographic boundaries of the project analysis include the following:

- Parks Highway and local Wasilla Area Road Improvements. Several nearby Parks Highway improvements are identified in the 2004-06 approved Statewide Transportation Improvement Program (STIP). Improvements, such as turn lanes and signal upgrades, are called for at the Palmer Wasilla Highway–Parks Highway intersection (STIP ID #2481). The 2004-06 approved STIP also calls for the following improvements just west of the immediate project area: rehabilitation and resurfacing of Wasilla-Fishhook Road (STIP ID #2503); construction of an intermodal passenger terminal and parking area near the Wasilla Airport (STIP ID #12739); extension of Church Road south from the Parks Highway to the Wasilla Airport, which includes possible signalized intersection with the Parks Highway and a grade separated crossing of the ARRC tracks (STIP ID #2461). Within the direct project area, DOT&PF plans to extend Seward Meridian Parkway to Old Matanuska Road; this is not in the STIP, but is considered a reasonably foreseeable project.

- Alaska Railroad Improvements. The ARRC has been planning and building track realignment projects between Anchorage and Wasilla. These efforts have and would reduce track curvature and improve safety features along the main track. The effort is separated into three segments: (1) Anchorage to Eagle River; (2) Eagle River to Knik River; (3) Knik River to Wasilla. For Segment 1, an EA has already been completed, and construction is expected to be completed in 2005. For Segment 2, a Finding of No Significant Impact was issued for the EA and construction is occurring. For Segment 3, FTA approved the Categorical Exclusion for most of the Knik to Wasilla segment.

  Although the South Wasilla Track Realignment project would support future development of commuter rail service between the Mat-Su Valley and Anchorage, development of these services is not guaranteed. If federal funding were to be obtained to facilitate development of commuter rail, additional environmental impact analyses would need to be conducted before those services could be implemented.

- Alternative Parks Highway Corridor. Discussion for an alternative Parks Highway (and railroad) corridor to bypass Wasilla has been ongoing for several decades. Planners have examined alternative highway and railroad corridor routes between south of the existing Parks Highway and further south towards Point MacKenzie. Federal funding and NEPA analysis would be needed for this effort to progress. These past planning efforts for realigning both the railroad and the Parks Highway outside of downtown Wasilla have occurred for some time but are large, expensive projects that are not currently in any long range (20-year) plans and are not anticipated to occur within the 10-year timeframe.

- Additional Residential Development. As the amount of available land in the greater Anchorage area decreases, growth has extended northward. The Mat-Su Valley is one of the fastest growing regions in Alaska. Over the next ten years, it is anticipated that vacant property within the project area would continue to be developed by additional residential development.

3.5.2 Cumulative Effects on the Physical Environment

Cumulative effects to air quality would result primarily from construction vehicle exhaust and fugitive dust emissions during site preparation and construction activities. When combined with other construction activities in the general area surrounding the project area (i.e., road construction improvements to the Parks Highway north of the project area), the incremental adverse impact of the action alternatives would be minimal. An increase in travel efficiency associated with the proposed project and the realignments along other segments of the railroad tracks could potentially reduce vehicle emissions in the Mat-Su Valley to Anchorage corridor, especially if commuter rail service is developed.

Cumulative impacts to aquatic resources would occur primarily from soil erosion and sedimentation and floodplain development upstream from the crossing. When mitigation measures for the action alternatives are taken into account, the incremental impact of the action alternatives with other reasonably foreseeable development on hydrology and water quality would be minimal.

3.5.3 Cumulative Effects on the Biological Environment

Implementation of the action alternatives would contribute to removal of vegetation common to the region. However, abandoned segments of the old railroad or roadways would be revegetated, which would mitigate for some loss of vegetation. Taking into account foreseeable future development within the general location surrounding the project area (residential) and the current land use in the project area (zoned industrial for two gravel pits), the availability of similar vegetation/habitat in the area and the fact that much of the Proposed Action occurs on disturbed ground, cumulative effects to vegetation would not be considered significant.

Agricultural and livestock grazing continue to be major land uses in the Palmer and Wasilla area, along with increasing urban development (Davis and Muhlberg 2002). The deposition of fine sediment has caused the Wasilla Creek channel to meander, further accelerating bank erosion. A site visit in the summer of 2003 led to the opinion that the area where the crossing of Wasilla Creek would occur has already been adversely affected with high levels of silt and sedimentation from past development upstream, which may have affected the spawning habitat, but which did not alter the high-quality rearing habitat for juvenile salmonids (HDR 2003a). The bridge crossing options were designed to reduce modification to the stream channels and result in no net loss of EFH. Thus the cumulative affect of the project added to the past actions is not considered significant.

3.5.4 Cumulative Effects on the Human Environment

The Proposed Action and other action alternatives would have a minor cumulative impact on land use by removing some parcels that are currently residential and other parcels that could be used for future expansion of the existing residential community (i.e., Creekside Preserve residential area). There are no foreseeable large-scale economic activities that would stimulate a substantial amount of expansion of the community; therefore, adequate vacant replacement land is available, and potential adverse cumulative impacts to land use would be minimal.

Realigning the tracks in the project area is generally consistent with land use and the intent of local governments vis-à-vis the other reasonably foreseeable development, based on studies they have commissioned and resolutions they have passed.

Most of the land to be used is considered uplands, and generally within the Wasilla vicinity, in areas where wetlands exist, geographical constraints would inhibit further development, as is the case with the wetlands located south of ARRC MP 158. This would limit cumulative effects to wetlands from

development. The minor amounts of wetland needing to be filled as part of this project would not contribute to significant cumulative effects.

Additional development along portions of the project corridor and in the Wasilla area in particular, is expected with or without the proposed project. The action alternatives would result in a small increase in employment and income in the greater Anchorage area. Travel time for rail passengers and freight between Wasilla, Anchorage, and locations north of Anchorage would decrease with implementation of an action alternative. These changes, coupled with projects being implemented by the DOT&PF, would improve travel efficiency, benefit the Alaskan economy, and support additional development in the Wasilla area.

No impacts to minority or low-income populations have been identified for any action alternative. In addition, no foreseeable future impacts are expected for the surrounding community. Therefore, cumulative impacts to minority or low-income populations would be negligible.

The Proposed Action, coupled with planned DOT&PF improvements would have a long-term beneficial cumulative effect on traffic safety by decreasing the risk of accidents by reducing curvature and eliminating five at-grade crossings in the project area. They would also improve railroad efficiency and reduce freight and passenger travel times. The action alternatives would make commuter rail service between Anchorage and the Mat-Su Valley more feasible, which would have a beneficial cumulative impact by decreasing traffic congestion within that transportation corridor.

No cumulative impacts to utilities or contaminated sites are anticipated. The Proposed Action and build alternatives would not contribute to cumulative effects on cultural or historic sites as compared to the No Action Alternative. Cumulative impacts to recreation are not expected for any action alternative.

3.6 Irretrievable and Irreversible Commitment of Resources

NEPA requires a review of significant irreversible and irretrievable effects that occur from development of the Proposed Action. Irretrievable effects apply to losses of production, use, or commitment of renewable natural resources. Irreversible effects apply primarily to the use of non-renewable resources, such as minerals or cultural resources, or to those factors that are only renewable over long periods of time, such as soil productivity. Irreversible effects also include the loss of future options.

Under the action alternatives, irretrievable and irreversible commitments of resources would occur from the use of land, fill and gravel resources, electrical energy, fuel, and labor. The commitment of energy and labor for construction is irretrievable and irreversible, but is not a significant impact. Land beneath the railroad embankment along the proposed alignment is the greatest irretrievable resource, but given the abundance of land in the Wasilla area, this impact is not significant. The No Action Alternative would have no change from the current commitment of resources.

3.7 Local Short-Term Uses verses Long-Term Productivity

NEPA requires a review of the balance between short-term uses and long-term productivity of resources within the project area. Generally, short-term refers to the useful life of the project. Long-term refers to the time beyond the lifetime of the project. Impacts that narrow the range of beneficial uses to the environment are of primary concern. Potential impacts include selecting a development option that reduces the ability to pursue other possibilities, or committing a piece of land or other resources to a particular use that limits additional uses being performed on this site.

Conversion of the land to a railroad use represents a short-term action that would have a long-term effect on the land's productivity. It would have a long-term beneficial affect on the productivity of the rail operations through time saving to travelers and operation and maintenance costs incurred by the ARRC. Over the long term, the productivity of the land would not be available to other uses. Development of any of the build alternatives would represent a small portion of land in the surrounding region. The other build alternatives would have similar impacts.

3.8 Mitigation

This section presents a summary of the mitigation measures that would be implemented under any action alternatives, as necessary. For additional details, please refer to the specific sections.

- Soils and Geology. The Proposed Action would be designed and take into account the region's potential for earthquake activity to mitigate the effect of damage to bridges and tracks.

- Hydrology, Flood Zones, and Water Resources. The bridge crossing Wasilla Creek would be designed to comply with Mat-Su Borough regulations, and would not raise the backwater surface elevation by more than 1 foot. The project would include drainage facilities to minimize pollution of waterways by storm or snowmelt runoff. The bridge would be constructed with a cast-in-place concrete deck, and no creosote treated materials would be used. ARRC would use contaminant-free embankment and surface materials and would design span lengths and pier locations to avoid most active channels.

- Wetlands and Waterbodies. During construction, appropriate BMPs for preventing sedimentation of adjacent wetlands would be employed. If determined to be feasible, steel pipe piles would be used to reduce impacts to the riparian wetland area of the creek. ARRC would clearly identify vegetation clearing and construction limits (boundaries) by staking, flagging, and/or fencing to prevent physical disturbance beyond the project limits authorized by the USACE Section 404 Permit. Compliance monitoring would be performed as needed.

- Fish and EFH. Construction in and around Wasilla Creek would take place when stream disturbances would have the least impact on anadromous fish species. Timing windows would be incorporated for all in-stream work and would be determined by permit stipulations. BMPs would be employed to minimize the introduction of sediment and siltation to the stream during bridge placement. All necessary permits and agency approvals would be obtained prior to construction and any permit stipulations would be incorporated into the contract specifications. Consult Section 3.4 for construction-related EFH mitigation measures.

- Wildlife. ARRC would continue to mitigate potential impacts to moose by complying with the 1991 Cooperative Agreement between ARRC and ADF&G.

- Right-of-way/Relocation. ARRC would provide relocation assistance to persons or businesses displaced by the project in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Act and the Alaska Relocation Assistance and Real Property Acquisition Practices. Property owners would be paid the fair market value of real property acquired for project ROW or easements.

- Transportation. ARRC would coordinate efforts with DOT&PF and City of Wasilla in the realignment of Old Matanuska Road. The overpass and road realignment to the City's sewage

treatment plant and Fairview Loop Road overpass and realignment would be coordinated during design and construction with the City of Wasilla and DOT&PF respectively.

- Noise. ARRC would acquire the full 200-foot ROW, thereby acquiring all residential properties that would have experienced a severe noise impact. East Jude Drive would be closed and all residential property there acquired.

- Utilities. Design and construction would be coordinated with appropriate utility companies. Efforts would be made to minimize the utility disruptions by timing work and outages to low use time periods. Residents and other utility customers would be notified in advance of construction activities requiring temporary service interruptions.

- Archeological and Historic Sites. Should construction activities unearth any archaeological or cultural resources, construction would be halted in the immediate area, and SHPO would be contacted.

- Contaminated Sites. Further investigation into possible contamination would be conducted prior to property acquisition. In the event contamination is encountered during construction, it would be addressed in accordance with applicable state and federal regulations.

- Construction.
  - Airborne particles would be controlled as necessary by the application of water or other controlled materials for dust suppression in accordance with established BMPs.
  - The contractor would use standard equipment with mufflers and would make certain that equipment is in good operating condition.
  - Water quality impacts resulting from erosion and sedimentation would be controlled in accordance with established BMPs. BMPs would include installing temporary erosion control measures such as wood excelsior mats, straw bales and/or silt fencing until vegetation can bind the soil or diversion dikes divert storm water away from the disturbed soils.
  - Disturbance to native vegetation outside of the embankment footprint would be minimized by limiting earth-moving equipment and fill-hauling trucks to areas within the footprint of the embankment or local roads whenever possible. Sites with new fill material would be revegetated with native plant species, which would partially mitigate disturbance to vegetation along the new realignment route.
  - A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for the project to obtain coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. Temporary bridging would be used for stream crossings and the Contractor would be required to revegetate disturbed areas. All construction staging, fueling, and servicing operations would be kept a minimum of 100 feet from Wasilla Creek and the adjacent wetlands.
  - For the new crossing of Wasilla Creek, ARRC would implement a project construction sequence that would minimize the extent of exposed soil at any given time.
  - ARRC would use contaminant-free embankment and surface materials in construction.
  - ARRC would monitor construction activities to ensure that temporary impacts are minimized.
  - ARRC would restore or stabilize all temporary disturbance areas following construction.
  - Temporary material storage piles would not be placed in the 100-year floodplain during the rainy season unless the following conditions are met: (1) storage does not occur when flooding is imminent; and (2) if storage piles consist of erosive material they are to be covered with plastic tarps (or similar) and surrounded with compost berms or other erosion

control devices. Material used within 12 hours of deposition is not considered a temporary material storage pile.

- Slopes with the potential to impact Wasilla Creek would be stabilized as soon as practicable.
- Standard spill-prevention measures would be implemented during construction. Spill clean-up equipment (e.g., oil-absorbent pads) would be available onsite during construction.
- Disturbed areas would be re-contoured to approximate original conditions and reseeded with native vegetation to minimize erosion and stabilize stream banks.
- Construction would be timed to minimize adverse effects to salmon during critical life stages. Timing windows would be incorporated into construction specifications for in-stream work. NMFS would prefer all in-water construction work to be done between October 1 and April 1, so that outmigrating salmon fry and smolt are not disturbed between April 1 to June 30 and adult salmon are not disturbed when entering Wasilla Creek in July through September. The timing window may be adjusted in permit stipulations.
- The public would be notified of road closings and other construction-related activities so that motorists, residents, and business people could plan travel routes in advance. A sign providing the name, address, and telephone of an ARRC contact person would be displayed on-site to assist the public in obtaining immediate responses to questions and concerns about project activities.

4.0 CONSULTATION AND COORDINATION

During the preparation of this EA, federal, state, and local agencies, governments, tribal organizations, and the public were consulted to obtain pertinent information, identify issues and mitigating measures, and assist in the development of reasonable alternatives. Initial outreach methods included newspaper advertisements, news release and postcard mailings announcing the public meeting, an open house public meeting, an interagency scoping meeting, and telephone interviews of key stakeholders. The initial coordination for the project is described in the project's Scoping Summary Report in Appendix 1 (HDR 2003b). Consultation has continued with various agencies regarding specific issues. Organizations that have been contacted about this project are listed below.

Federal Agencies
- Federal Transit Administration, Region X, Seattle, WA
- National Marine Fisheries Service
- U.S. Army Corps of Engineers, Regulatory Branch
- U.S. Coast Guard
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Environmental Protection Agency
- U.S. Fish & Wildlife Service

State Agencies
- Alaska Department of Environmental Conservation
- Alaska Department of Fish & Game, Statewide Services
- Alaska Department of Natural Resources, Division of Mining, Land & Water
- Alaska Department of Natural Resources, Office of Habitat Management & Permitting
- Alaska Department of Natural Resources, Office of History & Archaeology State Historic Preservation Officer (SHPO)
- Alaska Department of Natural Resources, Office of Project Management & Permitting
- Alaska Department of Transportation & Public Facilities

Local Agencies
- City of Wasilla
- City of Houston
- City of Palmer
- Matanuska-Susitna Borough

Tribal Organizations
- Knik Tribal Council/ Knik Native Village
- Knikatnu, Inc.
- Cook Inlet Region Inc.

Community Councils
- Meadow Lakes
- North Lakes
- Knik Fairview
- Point MacKenzie
- Willow Area

Other Organizations
- Greater Wasilla Chamber of Commerce
- Matanuska-Susitna Community Transit (MASCOT)

5.0 LIST OF PREPARERS

This EA was prepared by staff at HDR Alaska, Inc. Existing environmental analysis from an EA prepared for a similar ARRC track realignment project (Track Realignment Project – Eagle River to Knik River Segment EA) was used in the assessment of certain proposed project impacts when appropriate (ARRC 2002).

Function	Key Personnel	Organization	Education; Years Experience
Railroad Project Management and Review	Bruce Carr Barbara Hotchkin Clark Hopp Kristina Swanson Tom Brooks, P.E.	Alaska Railroad Corporation	
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Environmental Analysis	Brandy Bland Anne Leggett Kristen Maines Leslie Robbins	HDR Alaska, Inc.	B.A. Biology; 4 years M.S. Plant Ecology; 20 M.A. Economics; 5 B.A. Communications; 3
Geotechnical Analysis	Stafford Glashan, P.E.	Shannon and Wilson, Inc.	B.S. Environmental Engineering; 8
Historical & Cultural Resources	Michael Yarborough Doug Reger	Cultural Resource Consultants	M.A. Archeology; 30 Ph.D. Anthropology; 35
Wasilla Creek Hydraulics and Hydrology Analysis	Dan Billman, P.E. Bob Butera, P.E. Jason Kent, P.E.	HDR Alaska, Inc.	M.S. Civil Engineering; 20 B.S Civil Engineering; 21 M.S. Civil Engineering; 8
Fisheries	Paul McLarnon	HDR Alaska, Inc.	B.S. Aquatic Resources Management; 9
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Production/Word Processing	Dina Thompson	HDR Alaska, Inc.	N/A/; 18
GIS Mapping	Pro Mitra Laurie Cummings Leslie Robbins	HDR Alaska, Inc.	B.A.S. Civil Engineering; 10 M.U.P. Urban Planning; 6 B.A. Communications; 3

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